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Examining the Alliance-Outcome Relationship:

Reverse Causation, Third Variables, and Treatment Phase Artifacts

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A Dissertation

Presented to the

Faculty of Social Sciences

University of Denver

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

John Paul M. Reyes

November 2013

Advisor: Stephen R. Shirk, Ph.D.

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Author: John Paul M. Reyes
Title: Examining the Alliance-Outcome Relationship: Reverse Causation, Third Variables, and Treatment Phase Artifacts
Advisor: Stephen R. Shirk, Ph.D.
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Abstract

Psychotherapy research reveals consistent associations between therapeutic alliance and treatment outcomes in the youth and adult literatures. Despite these consistent findings, prospective associations are not sufficient to support the claim that the alliance is a change mechanism in psychotherapy. The current study examined the direction of effect of the alliance-outcome relationship, the contribution of early symptom change in treatment to the development of therapeutic alliance, and the potential for pretreatment interpersonal functioning characteristics to be third variables that account for the association between alliance and outcome. Participants were adolescents with depression and a history of interpersonal trauma that presented to a community mental health center for treatment. Findings demonstrated that a more positive therapeutic alliance predicted greater subsequent symptom improvement, even after removing symptom change occurring before the measurement of alliance. Results also suggested that early change only slightly contributed to alliance development. Finally, though pretreatment interpersonal functioning was related to the first session alliance, these pretreatment client characteristics were not related to later alliance or symptom change. Overall, results provided some support for therapeutic alliance as a mechanism of change in psychotherapy. Methodological and clinical issues are discussed.

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Background and Significance

Alliance in Youth Psychotherapy

Though the concept of therapeutic alliance is rooted in psychoanalytic theory, Bordin (1979) moved to reframe therapeutic alliance to span various psychotherapies. Bordin (1979) emphasized three primary components of alliance: bond, agreement on goals, and task collaboration. Bonds in therapy include the more affective experience of the therapeutic alliance. A positive therapeutic relationship most notably involves trust and acceptance. Agreement on goals between clients and clinicians refers to mutually developing and deciding on the aims of treatment as well as agreeing on the importance of those aims. Finally, tasks are the specific strategies employed within a particular type of treatment, and an effective therapeutic alliance is characterized by collaboration on these treatment tasks.

Though this three-factor model of therapeutic alliance is prevalent in both the adult and youth literature, it remains uncertain whether the model adequately captures the construct of alliance in youth psychotherapy. The importance of bond and work as distinct features of alliance remains a prominent feature of alliance in the youth literature (Estrada & Russell, 1999; Shirk & Saiz, 1992). Again, the bond dimension of alliance refers to the emotional and affective aspect of the therapeutic relationship, and work refers to collaboration and active participation in psychotherapy. Research on youth alliance has often emphasized the bond aspect of alliance, specifically highlighting the importance of youth clients perceiving their clinician as reliable, dependable, and responsive in order to facilitate treatment collaboration (e.g. Shirk & Saiz, 1992; Shirk & Russell, 1996; Shirk, Gudmundsen, Kaplinski, & McMakin, 2008). Interestingly, instead of confirming Bordin's three separate facets of alliance, a single-factor model of alliance emerged in two studies in the youth literature (DiGiuseppe et al., 1996; Faw, Hogue, Johnson, Diamond, & Liddle, 2005). This suggests that the components of alliance (i.e. bond and work) may be less

differentiated in youth psychotherapy. Therefore, Kazdin, Marciano, and Whitley (2005) proposed a unitary construct for youth therapeutic alliance called *collaborative bond*.

Alliance and Outcome Associations

The adult literature examining therapeutic alliance demonstrates consistent, moderate correlations between therapeutic alliance and improvement in psychotherapy across types of treatment (Horvath & Symonds, 1991; Martin et al., 2000). Horvath & Symonds (1991) performed a meta-analysis examining the association between therapeutic alliance and treatment outcome, including 7 psychodynamic interventions, 10 eclectic/mixed interventions, 2 cognitive therapies, and 1 Gestalt therapy. They reported an average effect size of .26. No significant differences were found in the effect sizes across the treatment types. A more recent meta-analytic study on therapeutic alliance and improvement in psychotherapy found similar results (Martin et al., 2000). The authors reported an average effect size of .22 (Martin et al., 2000). In accordance with Horvath and Symonds (1991), Martin et al. (2000) observed no association differences between types of psychotherapy.

While the youth research trails the adult research, many studies in the youth literature have emerged exploring the relationship between alliance and outcome. The research that has been conducted on associations between child and adolescent therapeutic relationship variables with treatment outcome reveals modest and consistent correlations similar to those found in the adult literature (Karver, Handelsman, Fields, & Bickman, 2006; Shirk & Karver, 2003; Shirk & Karver, 2011). Shirk and Karver (2003) identified 23 studies addressing correlations between the quality of the therapeutic relationship and psychotherapy treatment outcome. Of note, many of these studies used variables such as therapist warmth, therapeutic climate, or treatment participation as opposed to direct measures of therapeutic alliance. This meta-analysis revealed a weighted mean correlation of .20 between relationship variables and treatment outcomes (Shirk & Karver, 2003). Importantly, only nine of these studies explicitly measured therapeutic alliance, and a re-analysis of the data found a weighted mean correlation of .25 between alliance and outcome (Shirk & Karver, 2011). Another meta-analysis included 10 studies directly measuring

alliance in youth psychotherapy in relation to treatment outcome (Karver et al., 2006), revealing a weighted mean correlation of .21. In line with Shirk and Karver (2003), analyses demonstrated an association between alliance and outcome in youth psychotherapy in the small-to-moderate range. Shirk and colleagues (2010) further confirmed the strength of the alliance-outcome association in youth psychotherapy in their meta-analysis including 29 studies. Results remained very similar to previous meta-analyses showing a weighted mean correlation of .19.

Crits-Christoph and colleagues (2006) pinpointed a number of specific gaps in the therapeutic alliance literature including the issue of reverse causation and lack of causal closure, i.e., the potential impact of third variables on alliance and outcomes. In other words, the possibility remains that change in psychotherapy drives the quality of the therapeutic alliance instead of alliance driving therapeutic change. Further, third variables may explain the association between therapeutic alliance and change. Therefore, to strengthen the case for a causal relationship between therapeutic alliance and outcome, direction of effect and the potential role of third variables in the relationship between alliance and outcome must be addressed (Crits-Christoph et al., 2006).

Reverse Causation

The issue of reverse causation has not been completely ignored in the youth alliance literature. Shirk and Karver (Shirk & Karver, 2003; Shirk & Karver, in press) noted that many early studies of therapeutic alliance measured alliance and outcome simultaneously at the end of treatment. Therefore, they included in their analyses a comparison of therapeutic relationship and outcome correlations when the relationship was measured earlier in the therapeutic process versus later in the process, and they found a stronger alliance-outcome relationship when alliance was measured later in psychotherapy.

More recent studies of therapeutic alliance in child and adolescent psychotherapy have aimed to assess therapeutic alliance as a predictor of change by employing prospective methods in which alliance was measured early in psychotherapy and often at multiple time points (e.g. Chiu, McLeod, Har, & Wood, 2009; Hawley & Weisz, 2005; Hogue, Dauber, Faw Stambaugh,

Cecero, & Liddle, 2006; Kazdin et al., 2005; Kazdin, Whitley, & Marciano, 2006; McLeod & Weisz, 2005; Shirk et al., 2008). The majority of these studies indicate that the therapeutic alliance is a moderate predictor of change in psychotherapy, though the results are somewhat mixed. For example, Kazdin et al. (2006) studied the alliance-outcome relationship in youths (ages 3 to 14) referred for oppositional, aggressive, and antisocial behavior. All families received parent management training, and families with youths 7 years of age or greater also received cognitive problem solving skills training. Therapeutic alliance data were collected 4 weeks and 8 weeks after treatment initiation. For their analyses, alliance scores at sessions 4 and 8 were averaged to obtain a single measure of alliance, and they found that the therapeutic alliance between the youth and clinician was significantly correlated with change measured at the end of treatment (*Pearson's r* = .44). However, Hogue and colleagues (2006) performed a study involving adolescents receiving treatment for behavior problems and did not find significant effects of the therapeutic alliance on change in treatment in their individual cognitive behavior therapy condition.

Although a prospective association between alliance and outcome is necessary for establishing the alliance as a change mechanism in psychotherapy, it is far from sufficient (Shirk et al., 2010). Results from studies with prospective designs provide insufficient evidence because in spite of this improved methodology, the potential confound of prior symptom change remains since almost all existing studies have measured alliance after several sessions of treatment. Early symptom change in psychotherapy may predict subsequent change in psychotherapy in addition to predicting early therapeutic alliance (Crits-Christoph et al., 2006). A number of studies have revealed that substantial change in psychotherapy often occurs within the first few sessions of treatment (e. g., Crits-Christoph et al., 2001; Haas et al., 2002; Renaud et al., 1998). Further, these studies support early changes and pretreatment changes in psychotherapy as reliable predictors of treatment outcome. This literature coupled with the finding that sudden gains in psychotherapy are often followed by increases in therapeutic alliance (Tang & DeRubeis, 1999)

illustrate how the relationship of both early and late therapeutic alliance and treatment change may be confounded by change in treatment occurring before the alliance measurement.

Adult psychotherapy process researchers have attempted to address treatment change as a predictor of therapeutic alliance and subsequent change in psychotherapy. In a study by Barber, Connolly, Crits-Christoph, Gladis, and Siqueland (2000), alliance and symptom change were measured at sessions 2, 5, and 10, and results showed that alliances at session 5 and at session 10 were associated with symptom change occurring before the measurement of alliance. However, prior change in depressive symptoms was not associated with alliance at session 2. The authors also found that therapeutic alliance predicted subsequent change in depressive symptoms after controlling for prior change. Three other studies yielded similar results with therapeutic alliance continuing to predict outcome while removing or controlling for prior symptom change (Gaston, Marmar, Gallagher, and Thompson, 1991; Klein et al., 2003; Zuroff & Blatt, 2006). However, Feeley, DeRubeis, and Gelfand (1999) achieved results at odds with the four aforementioned studies. The authors found that alliance did not predict subsequent change. Further, when using prior change in depressive symptoms to predict middle and late alliance, marginally significant trends were found between prior change and middle alliance and between prior change and late alliance, implying that alliance may be a marker of symptom change.

Similar examinations of therapeutic alliance as a predictor of subsequent change, accounting for prior change, are nearly absent from the child and adolescent psychotherapy process literature. A recent study conducted by Chiu and colleagues (2009) employed a prospective design, and though the researchers did not control for prior change, they did control for initial severity. Further, the study included analyses exploring the direction of effect of the alliance-outcome relationship. Chiu et al. (2009) measured alliance using an observational coding system early in treatment (i.e., sessions 2 and 4) and late in treatment (i.e., sessions 8 and 10) in the context of a manual-guided cognitive behavior therapy for children diagnosed with anxiety disorders. Results demonstrated a significant association between early alliance and symptom severity measured at mid-treatment (after session 7), controlling for initial severity. Additional

analyses examined change in symptoms between pretreatment and mid-treatment as a predictor of late alliance, and unlike Feeley et al. (1999), results revealed no significant association between prior change and alliance late in treatment.

Reyes (2008) conducted analyses evaluating the alliance-outcome relationship in a manual-guided cognitive behavior therapy for adolescents diagnosed with depressive disorders. Analyses examined whether early alliance (measured at sessions 3 and 4) predicted subsequent symptom change (after session 4), controlling for prior change. Not only did observed alliance not predict subsequent change, it failed to predict symptom change without controlling for early change. Second, analyses examined the possibility of reverse effects by using prior symptom change (i.e. change between pretreatment and session 4) to predict early alliance. Again, no significant relationship was found. However, Reyes, Labouliere, Shirk, and Karver (2010) found that prior change did predict therapeutic alliance at the trend level. Of note, there were a number of methodological limitations for these studies. These limitations include using a unique sample of adolescents referred to treatment by school-based clinicians instead of concerned parents. Because the clinicians in the schools provided referrals directly to the adolescents, the study only included adolescents that independently agreed to seek treatment, and excluded those refusing the recommendation from school personnel. Also, the measure of prior change included change occurring before treatment initiation because depressive symptoms were assessed at pretreatment and not at treatment initiation. As a result, the measure of change in depressive symptoms did not align with the measurement of therapeutic alliance. Therefore, the current study aims to examine the question of direction of effects, while addressing these limitations, in the context of clinic-based psychotherapy for referred adolescents.

Early Treatment Phase

As previously reported, substantial change has been shown to take place over the course of the first few sessions of treatment (e. g., Crits-Christoph et al., 2001; Haas et al., 2002; Renaud et al., 1998). For example, Renaud et al. (1998) analyzed data from a sample of adolescents with Major Depressive Disorder. Adolescents in the study received cognitive behavior therapy,

systemic behavioral family therapy, or nondirective supportive treatments. Approximately one-third of these adolescents were classified as rapid responders, meaning their score on the Beck Depression Inventory dropped by at least 50% between pretreatment measurement and the start of the second session of treatment. No significant differences in early response to treatment were found across the treatment conditions.

Since the prevalence of rapid responders was consistent across treatment conditions (Renaud et al., 1998), it might be inferred that these early changes are due to non-specific factors of treatment (e.g. therapeutic alliance) versus treatment-specific strategies. In further support of this hypothesis, during the early treatment phase, it is likely that the majority of theoretically-driven treatment-specific strategies have not yet been introduced. Therefore, the assertion that early changes in psychotherapy are due to treatment-specific strategies seems less probable.

Interestingly, Renaud and colleagues (1998) reported that when participants in the nondirective supportive treatment condition failed to demonstrate a rapid response to treatment, they tended to not respond at all. In contrast, many participants in the cognitive behavior therapy and systemic behavior family therapy conditions experienced symptom improvement later in therapy, despite a lack of early response to treatment. These observations, in combination with the similar prevalence of rapid response across treatment conditions, introduce the possibility of treatment phase artifacts. It is possible that non-specific factors such as alliance are having their greatest impact during the early phase of treatment, which may explain why participants in the nondirective supportive treatment condition failed to show improvements in the absence of rapid early change. However, this pattern was not the same for the other two directive treatment conditions. This implies that later changes in psychotherapy are the result of treatment-specific strategies. Taken together, non-specific factors may be the primary cause of early changes in psychotherapy, while later changes in psychotherapy are the result of treatment-specific strategies. If this hypothesis is correct, then the inclusion of symptom change occurring in the later phase of psychotherapy in alliance-outcome analyses could be diluting the alliance-outcome relationship. More specifically, by including late phase symptom change in alliance-outcome

analyses, variance predicted by specific therapeutic strategies is being added to the predictive model. Therefore, the potentially stronger association between alliance and early change is being washed out.

Researchers have proposed a variety of potential causes of early change in psychotherapy. Haas et al. (2002) concluded that early change in psychotherapy reflects a client's response to non-specific factors since the majority of therapeutic strategies have not been introduced within the first few sessions of treatment, and they specifically recommended that the association between early response and the client-clinician relationship be explored. Further, Haas et al. (2002) also suggested that readiness and motivation to change might play a role in early symptom change. On the other hand, Tang and DeRubeis (1999) posited that important tasks in cognitive behavior therapy are present in this early phase of therapy (i.e., cognitive modification), and early changes in treatment reflect the successfully completion of these tasks.

Because research has traditionally focused on predicting treatment outcome as opposed to change occurring during different phases of therapy, only a small handful of studies have evaluated potential contributors of early change. Renaud et al. (1999) found that initial symptom severity did predict early change. Another study examined the relationship between a number of pretreatment client characteristics (i.e., age, gender, depression severity, anxiety severity, and interpersonal problems) and early change (Stulz, Lutz, Leach, Lucock, & Barkham, 2007). Results revealed that older age and more severe anxiety were associated with early symptom change, and none of the other pretreatment client characteristics, including interpersonal problems, demonstrated significant associations with early change. Most notably, Jungbluth (2007) evaluated a variety of factors as potential contributors to early change, including: specific therapeutic strategies (i.e., involvement in cognitive modification tasks), non-specific factors of psychotherapy (i.e., therapist-offered support, presentation of a credible treatment rationale, and pursuit of solutions to target symptoms), and pretreatment client characteristics i.e. social coping style, hostility, and initial severity). Results of this study were inconclusive as none of these variables emerged as a significant predictor of early change (Jungbluth, 2007). Despite the lack

of research exploring the relationship between therapeutic alliance and early change, some findings indicate that non-specific factors such as alliance may demonstrate most of its effect on symptom change during the early phase of therapy, and thus, alliance may be partially responsible for the early change phenomenon. Therefore, the current study will assess therapeutic alliance as a predictor of early symptom change in psychotherapy.

Third Variables

In addition to lacking research addressing whether or not therapeutic alliance serves as a predictor or a marker of treatment change, a relative absence of studies exploring precursors of therapeutic alliance (e.g. pretreatment client characteristics) in child and adolescent psychotherapy process research has been noted (Karver et al., 2005). This is particularly problematic because pretreatment client characteristics may prove to be variables that predispose clients to positive therapeutic alliance development and improvement in psychotherapy (Crits-Christoph et al., 2006).

Interpersonal problems. Because engaging and participating in treatment is a social process, researchers often emphasize the importance of clients' pretreatment interpersonal functioning to the psychotherapy process. Kazdin and Whitley (2006) asserted that social functioning of clients before treatment may indicate an increased responsiveness to specific strategies employed by the clinician and psychotherapy as a whole. Further, it is reasonable to assume that deficits in interpersonal functioning prior to treatment may translate into difficulties in the formation of a positive therapeutic alliance with the clinician. Similarly, Eltz et al. (1995) asserted that greater interpersonal difficulties may interfere with a youth's ability to effectively collaborate on therapeutic tasks. In fact, these investigators found that interpersonal problems, but not overall symptom severity, predicted initial alliance difficulties (Eltz et al., 1995)

Youth with externalizing problems have been found to be more difficult to engage in a positive therapeutic alliance (Bickman et al., 2004; Garcia & Weisz, 2002; Green et al., 2001; Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998). Considering the high frequency of oppositional and defiant behavior among clinic-referred youth, including those

referred for internalizing problems (Southam-Gerow, Weisz, & Kendall, 2003), engagement may be especially challenging with referred samples. These types of behavior may be related to distrust or dislike of adult authority figures such as therapists and a tendency to blame problems on others. Interestingly, Shirk and Karver's (2003) meta-analysis indicated that child and adolescent samples with primarily externalizing symptoms, demonstrated stronger correlations between alliance and outcome than samples with primarily internalizing symptoms. Due to the increased difficulty of engaging these youth, it remains probable that measures of therapeutic alliance with primarily externalizing symptoms demonstrate greater variability in alliance.

A number of studies in the adult literature found associations between therapeutic alliance and clients' pretreatment interpersonal functioning or constructs reflective of interpersonal functioning (e.g. Connolly Gibbons et al., 2003; Horvath & Luborsky, 1993; Kokotovic & Tracey, 1990; Mallinckrodt, 1991; Mallinckrodt, Coble, & Gantt, 1995; Marmar, Weiss, & Gaston, 1989; Muran, Segal, Samstag, & Crawford, 1994; Satterfield & Lyddon, 1995; Zigler & Glick, 1986; Zigler & Phillips, 1961). For example, Connolly Gibbons et al. (2003) and Marmar et al. (1989) found a positive correlation between more adaptive pretreatment interpersonal functioning and therapeutic alliance. In addition, Muran et al. (1994) reported a positive correlation between friendly-submissive interpersonal behaviors with alliance development and a negative correlation between hostile-dominant interpersonal behaviors with alliance development, and Kokotovic and Tracey (1990), reported that better therapeutic alliance ratings were related to lower hostility ratings, higher quality past and current relationships, and better past family relationships. The relationship between client pretreatment interpersonal functioning and therapeutic alliance development, however, remains inconclusive as some studies failed to find significant correlations between alliance and social functioning (Gaston, Marmar, Thompson, Gallagher, 1988) or constructs related to social functioning (e.g. social support; Mallinckrodt, 1996).

A few studies have explored the influence of pretreatment interpersonal behavior on therapeutic alliance formation in child and adolescent psychotherapy. In addition to the study by

Eltz et al. (1995), some studies have examined the relationship between pretreatment relationship factors and alliance using an indirect approach. For example, poor familial relationships or fewer sources of social support may reflect weaker interpersonal skills or a lack of prior experiences with healthy relationships. Research has demonstrated an association between family cohesion and youth-clinician alliance (Fields, Handelsman, Karver, & Bickman, manuscript under review). Devet et al. (2003) found that youth-clinician alliance was predicted by the quality of the parent-child relationship. Kazdin and Whitley (2006) showed a relationship between the quality of family relationships prior to treatment and parent alliance, and they found that parental social relations prior to treatment were associated with parental improvements in treatment. Additionally, pretreatment parental relations partially explained the relationship between parent-clinician alliance and improvements in parenting practices (Kazdin & Whitley, 2006). However, one study found a negative correlation between family functioning and parent-clinician alliance (Gavin, Wamboldt, Sorkin, Levy, & Wamboldt, 1999). The authors proposed that this finding may have been the result of a methodological flaw or possibly that parents of poorly functioning families experience a heightened desire for help.

A number of studies in the adult literature have examined the impact of pretreatment interpersonal functioning on therapeutic outcomes, and mixed findings have been reported. Borkovec, Newman, Pincus, and Lytle (2002), for example, conducted a study with a sample of clients diagnosed with Generalized Anxiety Disorder receiving components of a cognitive behavior therapy. Results revealed that clients with greater interpersonal problems prior to the start of treatment exhibited poorer outcomes at the post-treatment assessment. Additionally, Phillips and Zigler (1964) found that the prognosis for an inpatient sample was related to high and low social competence. Results showed that patients with a high social competence had shorter durations of hospitalization and were less likely to be re-hospitalized versus patients with a low social competence. On the other hand, Paivio and Bahr (1998) found that interpersonal problems were predictive of alliance; however, interpersonal difficulties were not related to final outcome. Fewer studies have addressed the association between interpersonal functioning and treatment

outcome in the youth literature, but a recent study explored the relationship between problem-solving skills and treatment outcome (Becker-Weidman, Jacobs, Reinecke, Silva, & March, 2010). It is possible that poor problem-solving ability may lead to increased interpersonal difficulties and strong problem-solving ability may lead to higher social competence. Using the Treatment for Adolescents with Depression Study data, the study showed that a negative social problem-solving orientation (e.g., "When my first efforts to solve a problem fail, I get very frustrated.") at pretreatment predicted more severe depression symptoms following 12 weeks of treatment, and a positive social problem-solving orientation (e.g., "Whenever I have a problem, I believe it can be solved.") predicted less severe symptoms (Becker-Weidman et al., 2010). Also, results demonstrated that an avoidant social problem-solving style predicted poorer depression outcomes. Taken together, research implies that indicators of interpersonal problems may demonstrate a negative correlation with alliance and outcome.

Attachment style. Another interpersonal variable possibly confounding the relationship between therapeutic alliance and outcome is style of attachment. The therapeutic relationship has been conceptualized in terms of attachment by many researchers. In fact, Bowlby (1988) suggested that a parent's role and a clinician's role may share many qualities. Just as a parent serves as a secure base for a child, a therapist serves as a secure base for the client, allowing the client to fully engage in the therapeutic process. Attachment styles reflect clients' models for relationships, which may be applied to the relationship between client and clinician. Thus, therapeutic alliance development could be influenced by a client's preexisting attachment pattern (Bowlby, 1988).

Clients presenting with a secure attachment pattern may be more inclined to disclose and examine personal sensitive information in treatment and actively participate in therapeutic tasks, leading to the development of a positive alliance (Mikulincer & Nachshon, 1991). On the other hand, clients with an insecure attachment pattern may be more inclined to refrain from developing bonds with clinicians and question clinicians' commitment to clients, potentially preventing the development of a positive alliance. Bowlby (1988) proposed that clients with an insecure

attachment pattern that have a corrective experience with their clinician as a secure base may demonstrate positive therapeutic changes.

Research using adult samples indicates that styles of attachment brought to treatment by clients may impact the development of the therapeutic alliance (see Smith, Msetfi, and Golding, 2010). For example, research has demonstrated that secure attachments styles are related to more positive alliances (e.g. Satterfield and Lyddon, 1998), and Mallinckrodt, Porter, and Kivlighan (2005) found that adult attachment anxiety was negatively related active participation dimensions of alliance, but not with the bond aspect of alliance in a sample of 44 females at a university counseling center. The relationship between attachment style and therapeutic alliance in individual youth psychotherapy has also not been adequately examined; however, Johnson, Ketring, Rohacs, and Brewer (2006) examined associations between attachment and therapeutic alliance in the context of family therapy including adolescents. The study found that the level of trust that adolescents endorsed was associated with therapeutic alliance, with greater trust in mothers and fathers enhancing alliance.

Interestingly, both the adult and youth literature have neglected to thoroughly examine the association between attachment styles and treatment outcome. One study was found in which the authors explored whether different models of attachment would moderate outcome for a trial comparing interpersonal psychotherapy and cognitive behavior therapy for adults diagnosed with major depressive disorder (McBride, Atkinson, Quilty, & Bagby, 2006). The study demonstrated that clients with higher ratings on attachment avoidance were more likely to experience depressive symptoms improvement in the cognitive behavior therapy condition than the interpersonal therapy condition. Additionally, Strauss et al. (2006) conducted a study assessing attachment characteristics and psychotherapy outcomes in a sample of 617 adult inpatient clients and found that attachment characteristics were related to treatment outcomes. More specifically, clients that were high on the ambivalence dimension of attachment retained the highest number of symptoms at the end of treatment. Though no studies evaluating associations between style of attachment or attachment characteristics and treatment outcome were found in the child and

adolescent literature, results from the adult literature indicate that attachment characteristics may serve as a reliable predictor of treatment outcome. Thus, the current study will assess clients' style of attachment as a potential predictor of alliance and outcome.

Summary, Aims, and Hypotheses

Summary

In summary, the current project will examine social problems, interpersonal problems, style of attachment, and early symptom change as potential predictors of therapeutic alliance. Further, the study will explore whether therapeutic alliance predicts change in treatment over and above that predicted by these variables, and the project will evaluate early alliance as a predictor of early change. These aims will be examined in the context of clinic-based psychotherapy for adolescents with depression and a history of interpersonal trauma, where interpersonal trauma is defined as the experience of sexual and/or physical abuse or witnessing domestic violence.

This research may be particularly important with this population. Research has demonstrated that experiencing trauma in childhood predicts subsequent difficulties in interpersonal functioning. More specifically, studies have revealed negative effects on interpersonal functioning for childhood sexual abuse (e.g., Davis & Petretic-Jackson, 2000), physical abuse (e.g., Kolko, 1992), and witnessing domestic violence (e.g. Kolbo, Blakely, & Engleman, 1996). Thus, adolescents with a history of interpersonal trauma may be at increased risk for interpersonal and attachment difficulties due to cognitions related to the traumatic experiences, and these factors may serve as barriers to a positive therapeutic alliance and change in treatment.

Aims and hypotheses related to these goals were:

Primary Aims

Aim 1. Evaluate therapeutic alliance (measured at session 4) as a predictor of treatment outcome (change between session 1 and post-treatment).

Hypothesis 1. Therapeutic alliance will be positively associated with decreases in depressive symptoms over the course of treatment.

Aim 2. Examine early change in symptoms (change between sessions 1 and 4) as a predictor of therapeutic alliance.

Hypothesis 2. Early decreases in depressive symptoms will be positively, but modestly associated with therapeutic alliance.

Aim 3. Evaluate therapeutic alliance as a predictor of subsequent symptom change in treatment (change between session 4 and post-treatment), therefore, removing the effect of early change in symptoms.

Hypothesis 3. Therapeutic alliance will continue to predict change in treatment after removing the effect of early change.

Aim 4. Examine early therapeutic alliance (measured at session 1) as a predictor of early change in treatment (change between sessions 1 and 4).

Hypothesis 4. The first session therapeutic alliance will predict early change in treatment.

Aim 5. Examine pretreatment interpersonal functioning (i.e., social problems, interpersonal problems, and attachment style) as predictors of therapeutic alliance.

Hypothesis 5(a). Interpersonal problems will be negatively associated with therapeutic alliance.

Hypothesis 5(b). Secure attachment styles will be positively associated with alliance, while insecure attachment styles will be negatively associated with alliance.

Aim 6. Evaluate therapeutic alliance as a predictor of symptom change, controlling for pretreatment interpersonal functioning.

Hypothesis 6. Therapeutic alliance will continue to predict symptom change after removing the variance predicted by pretreatment interpersonal functioning.

Secondary Aims

Aim 7. Evaluate pretreatment interpersonal functioning (i.e., social problems, interpersonal problems, and attachment style) as predictors of early therapeutic alliance.

Hypothesis 7. The pretreatment interpersonal functioning variables will demonstrate that same associations with early therapeutic alliance as session 4 alliance (see **Aim 5**).

Aim 8. Examine early therapeutic alliance as a predictor of symptom change, controlling for pretreatment interpersonal functioning.

Hypothesis 8: Therapeutic alliance will continue to predict symptom change after removing the variance predicted by pretreatment interpersonal functioning.

Methods

Participants

Data were obtained from a community-based randomized clinical trial of individual psychotherapy for depressed adolescents with a history of interpersonal trauma. Adolescents were included in the study if they met the following criteria: (1) 13 to 17 years of age, (2) consent from a parent or legal guardian for participation, (3) a diagnosis of depression (Major Depression, Dysthymia, Depressive Disorder, Not Otherwise Specified), (4) a Beck Depression Inventory-II score greater than 15, and (5) a reported history of interpersonal trauma. Adolescents were excluded if they met any of the following criteria: (1) a current diagnosis of Bipolar Disorder, (2) presence of psychotic symptoms or intellectual deficit (i.e., IQ < 70), (3) a co-morbid substance dependence disorder, (4) presence of a chronic medical condition, (6) suicide attempt in the last 3 months, (6) self-injurious behavior or cutting that required hospitalization or emergency room treatment, and (7) concurrent psychotherapy for depression.

Forty-three participants (36 female and 7 males) met eligibility criteria at the pretreatment visit. Eligible participants were between the ages of 13 and 17 (M = 15.48, SD = 1.53) with a primary diagnosis of a depressive disorder (Major Depressive Disorder (n = 35), Dysthymic Disorder (n = 3), or Depressive Disorder – Not Otherwise Specified (n = 5) who were referred for outpatient treatment through a large community mental health agency. This sample consisted of 49.6% non-Hispanic Caucasian youth. Hispanic (33%) and African American (38%) youth comprised the largest ethnic minority subsets of the sample. The ethnic diversity represented was greater than the ethnic/racial composition of the metropolitan area (U.S. Census Bureau, 2011). Participants endorsed having experienced at least one incident of: physical abuse (49%); being seriously threatened (35%); witnessing violence within the home or community (58%); sexual abuse (67%); and emotional abuse (47%). A majority of the sample endorsed experiencing more

than one type of trauma throughout their lifetime: one type (23%); two types (28%); three or more types (46%). A majority (58%) of the sample endorsed all three symptom criteria (re-experiencing, avoidance, and arousal) of post-traumatic stress; 46% met full DSM-IV diagnostic criteria for Post-Traumatic Stress Disorder. Based on parent/guardian-reports on the Child Behavior Checklist DSM-IV Oriented Scales (*CBCL DOS*; Achenbach et al., 2001), 33% of the sample had clinically- significant levels of anxiety. Twenty-eight percent of the sample had scores falling within the clinical range for Attention Deficit Hyperactivity Disorder, and 37% for Conduct Disorder. Forty- nine percent of the sample fell within the clinically-significant range on two *CBCL* DSM-IV Oriented Scales; 21% of the sample had clinically-significant symptoms on three or more scales. Approximately 14% of the sample endorsed using illegal substances at least three times a week.

Procedures

Prior to the initiation of the clinical trial, all procedures were approved by the institutional review board at the University of Denver and the community clinic review board. The intake clinician for the community clinics identified potential study participants during standard intake interviews. When this clinician made an initial, primary clinical diagnosis of a depressive disorder, the family was informed of their eligibility to participate in the research study (n = 109 adolescents). The parent/guardian of the adolescent were then asked to provide consent to be contacted by research staff (n = 101). Subsequently, participants and their parent/guardian were invited to a complete a pretreatment research assessment at the community clinic with a graduate-level research assistant (n = 93), and participants again provided consent to participate in treatment study procedures.

Adolescents (n = 43) who met all study inclusionary criteria during pretreatment assessments were assigned to treatment conditions using a stratified randomization procedure based on participant gender, given the gender differences in prevalence rates in trauma exposure (Pimlott-Kubiak & Cortina, 2003) and adolescent depression (Nolen-Hoeksema, 1990). Respective clinicians were asked to contact clients within two weeks of the pretreatment research

assessment to initiate treatment. Participants ineligible for the study (*n* = 50) were placed on the clinic waitlist, in line with clinic policy. Treatment sessions from both conditions were audio-recorded to allow for evaluation of treatment differentiation, fidelity, and therapeutic process coding. Participants were also asked to complete questionnaires throughout treatment, and complete two research interviews: one that occurred sixteen weeks after the pretreatment assessment (referred to herein as the "post-treatment assessment"), and another after three months following the post-treatment assessment (referred to as the "follow-up assessment").

Treatment and Therapists

Eligible adolescents were randomized into either the modified cognitive behavior treatment (m-CBT; *n* = 20) or treatment as usual (TAU; *n* = 23) conditions. Thirty-five participants attended at least one treatment session (m-CBT: *n* = 15; TAU: *n* = 20). A small difference was found between conditions in the average number of total sessions attended in the acute phase of treatment (i.e., between pretreatment and post-treatment assessments; m-CBT: *M* = 7.53, *SD* = 3.27; TAU: M = 6.61, *SD* = 3.64); however, this difference was statistically unreliable, *t*(34) = -.61, *p* = .54.

Therapists. The m-CBT and TAU treatments were implemented by community clinicians. The m-CBT condition was implemented by two Caucasian therapists (one male, doctoral-level clinician with twenty-eight years of clinical experience; one female, masters-level clinician with ten years of experience) who expressed interest in participating in the treatment study. Therapists in the TAU condition were two Caucasian, female, doctoral-level clinicians (with three and four years of clinical experience, respectively) who volunteered to participate in the TAU treatment condition. The therapists in the m-CBT condition completed a one-day workshop, conducted by Drs. Roemer (consultant), DePrince, and Shirk, that provided review of basic CBT principles, taught components of m-CBT, and mindfulness exercises. Therapists in the m-CBT condition each completed a practice case prior to the start of the randomized clinical trial; thereafter they received one hour of weekly supervision by Dr. DePrince. TAU therapists were supervised by the clinic team leader, consistent with clinic policy. Therapists in both conditions were compensated

financially for time spent conducting therapy sessions, supervision hours (m-CBT condition only), and earned a small honorarium for the return of audiotapes and in-session treatment measures completed by adolescents.

Treatments. The m-CBT protocol (DePrince & Shirk, 2013) was a revised, twelve-session, manualized CBT for adolescents with depression previously evaluated by two studies (Rosello & Bernal, 1999; Shirk, Kaplinski, & Gudmundsen, 2008). The treatment retained the core structure of the original manual, and had a specific emphasis on implementing mindfulness-based strategies around content specific to adolescents with CIT. The treatment included standard didactic portions of CBT (e.g., monitoring moods and cognitions, modifying maladaptive cognitions, relaxation skill building, and pleasant activity assignments), as well as a meta-cognitive approach to emotion regulation by building key mindfulness skills, such as taking a non-judgmental stance of observing, describing, and participating (Linehan, 1993; Segal, et al., 2002). These mindfulness-based strategies were hypothesized to improve concentration, awareness of cognitions, emotions, bodily sensations, and attention to living in the present (as opposed to ruminating about past events). The m-CBT protocol included explicit instruction for therapists to address cognitions related to adolescents' experience of interpersonal trauma throughout treatment. Addressing trauma-related cognitions was a treatment element that was specific to the m-CBT condition.

A stratified randomized sampling procedure was used to evaluate m-CBT treatment fidelity from randomized participants who attended at least one therapy session. For participants who attended fewer than five sessions (n = 18), two sessions were randomly selected for fidelity coding; for those who attended 6 or more sessions, three sessions were selected. Observational coding of treatment content was completed on 30.2% (42/139) of therapy sessions attended within the m-CBT condition. A subset of double-coded sessions (50%; 21/42) demonstrated high inter-rater reliability (ICC = .86). Overall, results indicated that the m-CBT treatment was delivered with a high degree of fidelity to the treatment as developed, with 85% of prescribed components delivered.

Based on findings from previous research (Weisz, Southam-Gerow, Gordis, et al, 2009; Weersing & Weisz, 2002), the TAU treatment condition was anticipated to be an eclectic form of therapy that involves psychodynamic, supportive, and family approaches as well as other non-behavioral methods. As indicated by the director of the community clinics, the treatment for depressed adolescents was anticipated to be comprised of a blend of individual supportive and family therapeutic techniques, with limited implementation of cognitive and behavioral approaches (personal communication with Drs. DePrince and Shirk, 2009). Treatment implemented in the TAU treatment condition did not follow a specified manual, and was based on the therapists' case formulation. Therapists were anticipated to have elicited emotions related to significant life events, used strategies such as reflection and validation for expressed emotions, and helped clients to understand the underlying meanings of life events and experiences.

In order to identify the therapeutic techniques employed in the TAU treatment condition, a stratified random sampling procedure was used. One session from the early (sessions 1 to 4), middle (sessions 5 to 8), and late phases (sessions 8 to 12) of treatment were used. Thirty-five percent (63/182) of therapy sessions were observationally coded using a modified version of the Therapy Process Observational Coding System for Child Psychotherapy – Strategies Scale (*TPOCS-S*; McLeod, 2010). Reliability analyses demonstrated adequate item-level inter-rater reliability (ICC's ranged from .59 to .74 for TPOCS-S subscales; ICC = .91 for full-scale TPOCS-S). Descriptive statistics of TPOCS-S subscale extensiveness ratings (on a seven-point extensiveness rating, where 1 = none or not covered and 7 = extensively covered) were: *client-centered* (M = 5.33, SD = .97); *cognitive* (M = 1.46, SD = .91); *behavioral* (M = 1.56, SD = 1.07); *psychodynamic* (M = 2.03, SD = 1.09); and *family* (M = 1.41, SD = 1.03). As anticipated, the TAU condition included minimal emotion regulation skill training: *mindfulness* (M = 1.00, SD = .00). Overall, results indicated that treatment in the TAU condition consisted of interventions employing strategies from multiple theoretical orientations at generally low levels of extensiveness, except for client-centered strategies. Essentially, no mindfulness-based strategies were observed.

Measures

Kiddie-SADS Diagnostic Interview (*K-SADS-PL*; Kaufman, Bermaher, Brent, & Rao, 1997). The K-SADS-PL is a semi-structured diagnostic interview that generates DSM-IV diagnoses including Major/Minor Depression, Dysthymia, Bipolar Disorder, Post-Traumatic Stress Disorder, and Conduct Disorder. The K-SADS-PL was administered by graduate students trained in the administration of the interview by Dr. Shirk. The K-SADS-PL was used to screen adolescents for inclusion and exclusion disorders at pretreatment. In addition, categorical diagnoses of depressive disorders provided a method for assessing treatment response. The K-SADS-PL has demonstrated adequate reliability and validity in school-age youth samples (Kaufman et al., 1997). The K-SADS-PL was administered at pretreatment and post-treatment.

Beck Depression Inventory-II (*BDI-II*; Beck, Steer, Ball, & Ranieri, 1996). The BDI-II is a 21-item self-report measure of depressive symptoms in a forced choice format. Scores range from 0 to 3 reflecting the intensity of the specific symptom. The psychometric properties of the BDI-II have been well-documented with an average internal consistency of .86 among psychiatric patients, and it has demonstrated adequate reliability and validity with adolescent populations (e.g., Kumar, Steer, Teitelman, & Vallacis, 2002; Stapleton, Sander, Stark, 2007). Internal consistency was good for the current sample (*Chronbach's* α = .91 to .94). The total score was used as a dimensional measure of depressive symptom change over the course of the treatment, and the BDI-II was administered at pretreatment, session 1, session 4, and post-treatment.

The Therapy Process Observational Coding System for Child Psychotherapy – Alliance Scale (*TPOSC-A*; McLeod, 2005). The TPOCS-A was used to measure the quality of the therapeutic alliance. An observational measure was chosen in an effort to decrease inflation of associations with alliance potentially resulting from same-source and same-method variance. The TPOCS-A consists of two subscales corresponding to the bond and work dimensions of youth alliance. Six items of the scale assess affective elements of the client-clinician relationship, and 3 items that assess client participation in therapeutic activities. After listening to an entire therapy session, coders will then rate each item on a 6-point scale ranging from 0 (not at all) to 5 (a great

deal). In a previous study that reported upon the development and validation of the TPOSC-A, the measure demonstrated adequate interrater reliability, internal consistency, and convergent validity (McLeod & Weisz, 2005), and it has recently been successfully used to code therapeutic alliance in two studies (Chiu et al., 2009; Liber et al., 2010). Sessions 1 and 4 were coded for alliance, and the psychometric properties are reported in the Results section below.

Inventory of Interpersonal Problems-32 (*IIP-32*; Barkham, Hardy, & Startup, 1990). The IIP-32 is a self-report measure consisting of 32 items. This questionnaire provides a measure of a participant's level of interpersonal functioning. The IIP-32 is an abbreviated version of the Inventory of Interpersonal Problems (IIP; Horowitz, Rosenberg, Baer, Ureno, & Villasenor, 1988). Items on the IIP-32 were chosen through factor analysis and maintained all eight subscales of the IIP (i.e., social, assertive, aggressive, open, caring, supportive, involved, and dependent) and this abbreviated measure dropped the dependent and involved subscales. In order to ensure that IIP-32 items were at an appropriate reading level for adolescents, some items have been re-worded for this study. For example, IIP-32 item 18 ("It is hard for me to attend to my own welfare when somebody else is needy") was revised to read "It is hard for me to take care of myself when somebody else needs help." Versions of the IIP have been successfully used with adolescent populations in previous research (e.g. Waters, Donaldson, Zimmer-Gembeck, 2008; Winn et al., 2007) demonstrating adequate psychometric properties. For the current sample, internal consistencies for the subscales ranged from .71 to .80. The IIP-32 was administered at the pretreatment assessment.

Child Behavior Checklist (*CBCL*; Achenbach & Rescorla, 2004). The CBCL is a widely used and well-validated parent report instrument that provides age- and gender-normed T scores for both broadband and narrow band emotional and behavioral problems. The measure, then, is highly useful for evaluating symptom severity in multiple domains. In this project, the CBCL was primarily used to assess interpersonal functioning (i.e., Social Problems subscale). The Social Problems subscale consists of items assessing interpersonal difficulties. Internal consistency for

the social problems subscale was good for the current sample (*Chronbach's* α = .88). The CBCL was administered at pretreatment.

The Adult Attachment Scale (*AAS*; Collins & Read, 1990) is an 18-item self-report measure developed from adult attachment styles described by Hazan and Shaver (1987) and Ainsworth (1982). The subject must indicate the extent to which each statement describes his or her feelings on a scale rating from (1) not at all characteristic to (5) very characteristic. Three subscale scores indicate a person's comfort depending on others (depend), anxiety in relationships (anxiety), and comfort with closeness and intimacy (close). As with the IIP-32, select items were re-worded to ensure that they were developmentally appropriate. The AAS and similar measures have been successfully used with adolescent populations (Collins, Cooper, Albino, & Allard, 2002; Davila et al., 2009; Steinberg, Davila, & Fincham, 2006). For the current sample, internal consistencies for the subscales range from .70 to .74. The AAS was administered at pretreatment to adolescents.

Training Independent Raters

Two independent, graduate-level raters were trained to code the therapeutic alliance using the TPOCS-A. First, training began with participating in a workshop reviewing and discussing the TPOCS-A coding manual with the developer of the measure, Dr. Bryce McLeod. Second, each coder independently rated therapeutic alliance on a sampling of audio taped sessions (not to be used in the current study), previously demonstrating high inter-rater reliability between Dr. McLeod and previously trained raters. Training was complete once the raters exceeded the criterion level of consistency (ICC > .70). Finally, inter-rater reliability was checked periodically throughout the coding process, and within rater reliability was assessed.

Results

Preliminary analyses

Descriptive statistics. Means and standard deviations for all variables are presented in Table 1. Three outliers were identified for all variables: one outlier for TPOCS-A at session 1, one outlier for TPOCS-A at session 4, and one outlier for an IIP-32 subscale (i.e., hard to be sociable) at pretreatment. Outliers were adjusted by bringing them in to 1.5 times the interquartile range beyond the first or third quartile to prevent undue influence of these data. Skewness and kurtosis were within acceptable ranges for all variables.

Data imputation. Approximately 6% of model variable data were missing, excluding the pretreatment interpersonal functioning variables. Three variables were missing data that appeared to be good candidates for imputation: observed alliance at session 4 (five missing), depression symptoms at session 4 (three missing), and depression symptoms at week-16 (two missing). Missing data were the result of treatment attrition, missed appointments, and technical difficulties with recording sessions. First, data were examined to ensure there were no patterns of missingness, which would preclude imputation of the missing data. To evaluate patterns in the missing data, dichotomous variables (missing and not missing) were created, and logistic regressions examined whether any pretreatment client characteristics or other variables in the model predicted missingness. No significant predictors were noted. Independent samples t-tests and chi-square tests were also conducted on demographic and model variables to compare adolescents with and without missing data, and no statistically reliable differences were found. These results suggest that data were missing at random, and the missing data were imputed utilizing multiple imputation methods in the student-version of PRELIS (Lisrel, 8.80; Jöreskog & Sörbom, 2002). Nineteen variables outside the model were used to impute missing data. Previous research using simulated data has demonstrated that multiple imputation provides a

more accurate representation of missing scores than other methods, such as last observation carried forward, mean substitution, or regression imputation (Little & Rubin, 1987). Data imputation resulted in an *N* of 35 for Aims 1 through 4.

Due to difficulties obtaining additional self-report measures from research participants for pretreatment interpersonal functioning variables, 40% of the interpersonal functioning data was missing. As a result of this high percentage of missingness in combination with the limited amount of data from which to impute, these variables were not appropriate candidates for imputation. Therefore, analyses for Aims 5 through 8 are based on a reduced sample size of $N = 21$.[1] Thus, results for Aims 5 through 8 must be evaluated with increased caution.

TPOCS-A Reliability and Validity. Coding data using the TPOCS-A were evaluated for reliability and validity. The TPOCS-A demonstrated good internal consistency for the bond subscale (*Chronbach's* $\alpha = .93$), task subscale (*Chronbach's* $\alpha = .96$), and overall alliance composite (*Chronbach's* $\alpha = .94$). Inter-rater reliability statistics were computed. For individual items comprising the TPOCS-A alliance subscales, the intra-class correlations for the 17 double-coded segments ranged from .41 to .89. For the bond and task subscales of the TPOCS-A, the intra-class correlations were .87 and .92, respectively. These inter-rater reliability statistics are similar to those reported in previous studies using the TPOCS-A (e.g., Chiu et al., 2009). Fjemerstad and colleagues (2012) performed a factor analysis on the TPOCS-A, which suggested that the TPOCS-A is most accurately characterized by a single factor solution. Therefore, supported by the high correlation between the alliance bond and task subscales at session 1, $r(33) = .88$, $p < .01$, and session 4, $r(33) = .58$, $p < .01$), subsequent analyses examining therapeutic alliance were conducted using the overall alliance composite.

[1] Two factors contributed to the reduced sample size, when including pretreatment interpersonal functioning variables. First, these measures were added to the research protocol after ten participants were randomized and initiated treatment. Therefore, while these participants were contacted to complete the study measures, few responded. Second, due to the length of the pretreatment visit research protocol, these measures were provided to participants to complete after the pretreatment visit and submit to the researchers electronically or via postal mail prior to initiating treatment, and the response rate was approximately 85%.

Treatment condition effects. Due to concerns of power related to sample size, analyses were conducted in order to determine whether the m-CBT and TAU conditions could be collapsed into a single sample for subsequent analyses (Table 2). First, independent samples t-tests were performed to determine whether treatment conditions differed in terms of therapeutic alliance and residual symptom change. Results did not reveal significant differences in therapeutic alliance and residual symptom change between the m-CBT and TAU conditions. Further, no differences between treatment conditions on pretreatment interpersonal functioning variables were revealed, indicating that model variables were not associated with treatment condition. Therefore, subsequent analyses combined treatment conditions.

Full and reduced sample differences. Because pretreatment interpersonal functioning data was received for only a subsample of participants (i.e., $N = 21$) compared to the full sample of $N = 35$, analyses were conducted to determine if any core study variable differences were present between those with and without pretreatment interpersonal functioning data. Independent samples t-tests were performed to determine whether participants with complete data differed from those missing pretreatment interpersonal functioning data in terms of therapeutic alliance and residual symptom change (Table 3). Results did not reveal statistically significant differences in therapeutic alliance and residual symptom change between those with complete data compared to those with incomplete data. However, a non-significant difference was noted on session 4 alliance between participants with ($M = 31.76$, $SD = 6.54$) and without complete data ($M = 28.71$, $SD = 5.36$), $t(33) = 1.45$, $p = .16$. Overall, these results suggest that model variables were not associated with missing pretreatment interpersonal functioning data, and participants with and participants without pretreatment interpersonal functioning data did not differ on model variables.

Further, t-tests were performed to determine whether participants with and participants without pretreatment interpersonal functioning data differed in terms of demographic variables (i.e., gender, age, and ethnicity), and results indicated that the two samples were similar in gender, age, and ethnicity. Therefore, the larger participant sample ($N = 35$) was used for

analyses not examining pretreatment interpersonal functioning variables (Aim 1 to Aim 4), and the reduced sample (N = 21) was used for analyses including pretreatment interpersonal functioning variables (Aim 5 to Aim 8).

Therapist differences. In order to determine whether the four individual therapists differed on the core study variables (i.e., therapeutic alliance and residual symptom change; Table 4), one-way ANOVA's were conducted to examine therapist differences in session 1 alliance; session 4 alliance; and residual symptom change between sessions 1 and 4, between session 4 and 16-week assessment, and between session 1 and 16-week assessment. Results indicated a therapist effect on session 1 alliance, $F(3, 31) = 3.01$, $p < .05$.

A post-hoc Scheffe multiple comparisons test revealed that therapist 2 (M = 33.00, SD = 4.51) demonstrated a marginally higher average session 1 alliance than therapist 4 (M = 24.93, SD = 7.07), $F(3, 31) = 3.01$, $p = .07$. No other therapist comparisons revealed significant results. In order to control for therapist effects in subsequent analyses, the therapist variable was recoded into an ordinal variable ranking the four therapists from lowest average alliance to highest.

Demographic variable associations. Analyses examining associations between demographic variables (i.e., gender, ethnicity, and age) and model variables showed multiple relationships (Table 4). Of note, higher age was associated with greater observed alliance scores at session 1, $r(33) = .53$, $p < .01$. Being female and belonging to an ethnic minority group were related to greater observed alliance scores at session 4 ($rs(33) = .39$, $p = .02$; $rs(33) = .34$, $p = .05$). Belonging to an ethnic minority group was also related to greater decreases in depression symptoms from session 1 to week-16, $rs(33) = -.39$, $p = .02$). Demographic variables that demonstrated associations with model variables were included in further analyses as control variables.

Primary Analyses

Therapeutic alliance predicting depression change in treatment. In order to evaluate therapeutic alliance as a predictor of symptom change (Aim 1), hierarchical multiple regression analyses were used to predict change in depression symptoms from session 1 to the end of acute

treatment at 16 weeks (Table 5a). BDI total at session 1 and observed alliance at session 1 were added to the model to predict BDI total at the 16-week assessment (R^2 = .09, F(2, 32) = 1.58, p = .22). BDI at session 1 predicted week 16 BDI at the trend level (β = .31, p = .09); however, session 1 observed alliance (β = -.12, p = .51) was not a predictor of BDI at week 16.

Because therapist and age were related to session 1 alliance and ethnic minority status was correlated with residual symptom change from session 1 to 16-week assessment, therapist, age, and ethnic minority status were entered in the hierarchical multiple regression as control variables to determine whether these variables suppressed or masked the relationship between alliance and symptom change, R^2 = .28, F(5,29) = 2.21, p = .08. This analysis showed a relationship between ethnic minority status and week 16 BDI (β = -.42, p = .02), indicating that belonging to an ethnic minority group was related to lower BDI scores at 16-week assessment. Additionally, depression symptoms at session 1 predicted week 16 BDI at the trend level (β = .32, p = .07), meaning that higher session 1 BDI scores were associated with higher week 16 BDI scores. However, no relationship emerged between observed alliance at session 1 and treatment change (β = .11, p = .62).

A parallel analysis was performed examining session 4 observed alliance as a predictor of BDI at week 16, controlling for BDI total at session 1, R^2 = .22, F(2, 32) = 4.61, p = .02. Both session 1 BDI (β = .54, p < .01) and session 4 alliance (β = -.47, p = .02) were associated with BDI total at 16-week assessment (Table 5b). Higher alliance scores at session 4 predicted lower BDI scores at week 16, controlling for session 1 BDI.

Because gender and ethnic minority status were related to alliance at session 4 and ethnic minority status was also related to residual symptom change between session 1 and 16-week assessment, gender and ethnic minority status were entered in the hierarchical multiple regression as control variables to determine whether these variables impacted the relationship between alliance and symptom change, R^2 = .28, F(4, 30) = 2.92, p = .04. While BDI at session 1 continued to predict depression symptoms at week 16 (β = .48, p = .02), the association between session 4 alliance and change in depressive symptoms was reduced and no longer statitically

significant (β = -.30, p = .19). After controlling for session 1 BDI, gender, and ethnic minority status, session 4 alliance accounted for 4% of the outcome variance (r = .20).

Early change predicting therapeutic alliance. To examine early change in symptoms as a predictor of therapeutic alliance (Aim 2), a correlation was computed to determine whether early residual change in symptoms (i.e., residual symptom change between sessions 1 and 4) predicted therapeutic alliance at session 4, and only a small but statistically insignificant relationship was demonstrated, $r(33)$ = -.17, p = .34. Because gender and ethnic minority status were correlated with session 4 alliance, gender, ethnic minority status, and residual change from sessions 1 to 4 were entered in a regression model to determine whether gender or ethnic minority status suppressed or masked the relationship between early symptom change and alliance, R^2 = .28, $F(3, 31)$ = 4.06, p = .02 (Table 5). While gender (β = .41, p = .01) and ethnic minority status (β = .36, p < .05) were related to session 4 alliance, early symptom change demonstrated no association (β = .00, p > .05).

A regression analysis was also performed to determine whether early symptom change predicted residual change in observed alliance between sessions 1 and 4 (Table 5). Session 1 alliance and early residual symptom change were used to predict session 4 alliance, R^2 = .10, $F(2, 32)$ = 1.84, p = .18. Though not significant, the regression suggested that session 1 therapuetic alliance predicted session 4 alliance (β = .28, p = .11). Session 1 alliance accounted for 7% of the variance of session 4 alliance (r = .26). Early residual symptom change was not a significant predictor of change in observed alliance (β = -.17, p = .32).

Therapeutic alliance predicting subsequent symptom change. In order to evaluate whether therapeutic alliance at session 4 predicted subsequent symptom change (i.e., change between sessions 4 and 16-week assessment), removing prior change (Aim 3), a regression was performed with BDI total and observed alliance at session 4 entered as predictor variables and week 16 BDI entered as the dependent variable, R^2 = .33, $F(2, 34)$ = 7.79, p < .01 (Table 7). Both BDI total (β = .58, p < .01) and observed alliance (β = -.34, p = .03) at session 4 were related to depression symptoms at 16-week assessment. Because gender and ethnic minority status were

related to alliance at session 4, gender and ethnic minority status were entered in the hierarchical multiple regression as control variables to determine whether these variables impacted the relationship between alliance and subsequent symptom change, R^2 = .35, F(4, 30) = 4.02, p = .01. While BDI total at session 4 (β = .52, p < .01) continued to predict depression symptoms at 16-week assessment, session 4 alliance (β = -.24, p = .22) was not reliably related to subsequent change, after controlling for gender and ethnic minority status. However, session 4 alliance continued to account for 4% of the variance of week 16 BDI scores (r = .20).

Early therapeutic alliance predicting early symptom change. To examine early therapeutic alliance as a predictor of early residual change in treatment (i.e., residual change between sessions 1 and 4) (Aim 4), correlations between session 1 observed alliance and the early change residuals were explored. A correlation was computed to determine whether observed alliance at session 1 was related to early change in symptoms (i.e., residual depression symptom change between sessions 1 and 4). Session 1 therapeutic alliance was not associated with early change in depression symptoms, r(33) = .02, p = .93.

Pretreatment interpersonal functioning predicting alliance. To examine client pretreatment interpersonal functioning as a predictor of therapeutic alliance (Aim 5) and explore whether therapeutic alliance serves only as a proxy for pretreatment interpersonal functioning, correlations were performed between pretreatment interpersonal functioning variables and observed therapeutic alliance. If the alliance is simply a marker or proxy for pretreatment social characteristics, alliance and these pretreatment variables should be associated. Correlations between the Social Problems subscale of the CBCL, the eight subscales of the IIP-32 (i.e., Hard to be Sociable, Hard to be Assertive, Too Aggressive, Too Open, Too Caring, Hard to be Supportive, Hard to be Involved, and Too Dependent subscales), and the three subscales of the AAS (i.e., Depend, Anxiety, and Close subscales) and sessions 1 and 4 observed therapeutic alliance were examined (Table 8). Again, the present and subsequent analyses were all performed using only the reduced sample size of 21 due to missing pretreatment interpersonal functioning data. Session 1 observed alliance was positively associated with the Too Caring

subscale of the IIP-32, $r(19) = .52$, $p = .02$; negatively associated with the Hard to be Supportive scale of the IIP-32, $r(19) = -.46$, $p = .03$; and positively associated at the trend level with the Too Open subscale of the IIP-32, $r(19) = .40$, $p = .07$. Alliance at session 4 was not related to social problems, overall interpersonal problems, including all subscales, or attachment style.

Because therapist and age were correlated with session 1 alliance and age was also correlated with the Hard to be Supportive subscale of the IIP-32, therapist and age were entered in parallel regression models along with each of the pretreatment interpersonal functioning variables (i.e., Too Caring, Hard to be Supportive, and Too Open subscales of the IIP-32) to determine whether therapist and age impacted the relationship between pre-treatement interpersonal functioning and session 1 alliance (Table 9). First, therapist, age, and the Too Caring subscale were entered in a regression model predicting session 1 alliance, $R^2 = .74$, $F(3, 17) = 15.74$, $p < .001$. Therapist ($\beta = .40$, $p < .01$), age ($\beta = .55$, $p < .01$), and the Too Caring subscale ($\beta = .29$, $p = .04$) each predicted session 1 therapeutic alliance.

Next, therapist, age, and the Hard to be Supportive subscale were entered in a regression model predicting session 1 alliance, $R^2 = .66$, $F(3, 17) = 11.03$, $p < .001$. While therapist ($\beta = .45$, $p = .01$) and age ($\beta = .63$, $p < .01$) were related to session 1 alliance, the Hard to be Supportive subscale of the IIP-32 ($\beta = .01$, $p = .96$) no longer demonstrated a relationship with therapeutic alliance at session 1. Third, the Too Open subscale was entered in a regression model to predict session 1 alliance, controlling for therapist and age, $R^2 = .76$, $F(3, 17) = 18.38$, $p < .001$. Therapist ($\beta = .39$, $p < .01$), age ($\beta = .63$, $p < .001$), and the Too Open subscale ($\beta = .33$, $p = .01$) each predicted therapeutic alliance at session 1.

Therapeutic alliance predicting change, controlling for interpersonal functioning. In order to evaluate therapeutic alliance as a predictor of change in depressive symptoms from session 1 to week 16, controlling for pretreatment interpersonal functioning (Aim 6), multiple regression analyses were planned. It was hypothesized that alliance would predict outcome even after controlling for associated variables. Because therapeutic alliance at session 1 was not associated with symptom change and no interpersonal functioning variables were associated with

session 4 alliance, these analyses were not warranted. In the first case, pretreatment characteristics were related to session 1 alliance, but session 1 alliance was not related to change in symptoms; in the second, session 4 alliance was associated with change in symptoms, but not to pretreatment characteristics. If the alliance is merely a marker of pretreatment characteristics, both conditions must be met.

Although pretreatment variables were not associated with session 4 alliance, two pretreatment characteristics (i.e., Too Aggressive and Too Open subscales of the IIP-32) were predictive of residual change in depressive symptoms between session 1 and week 16 and residual change between session 4 to week 16 (Table 8). To evaluate whether or not alliance at session 4 predicted overall residual change in depressive symptoms (session 1 to week 16) and subsequent residual change (session 4 to week 16), multiple regression analyses were performed with the aforementioned IIP-32 subscales as control variables (Table 10). Because of reduced sample size, demographic control variables were not included in these analyses. Therapeutic alliance at session 4 continued to predict week 16 BDI at the trend level (β = -.34, p = .07), when controlling for session 1 BDI, the Too Aggressive subscale of the IIP-32, and the Too Open subscale of the IIP-32, R^2 = .69, F(4, 16) = 9.08, p < .01. Further, session 4 therapeutic alliance continued to predict week 16 BDI (β = -.39, p < .01), when controlling for session 4 BDI, the Too Aggressive subscale of the IIP-32, and the Too Open subscale of the IIP-32, R^2 = .78, F(4, 16) = 14.02, p < .001.

Secondary Analyses

Early alliance predicting early change, controlling for interpersonal functioning. To examine early therapeutic alliance as a predictor of symptom change, controlling for pretreatment interpersonal functioning (Aim 8), parallel regression analyses were planned using session 1 alliance as a predictor of symptom change between sessions 1 and 4, controlling for pretreatment interpersonal functioning variables. Again, because therapeutic alliance at session 1 was not associated with symptom change, these analyses were not warranted.

Although these regressions were not warranted, correlations between pretreatment interpersonal functioning variables and early residual symptom change (sessions 1 to 4) were explored. No pretreatment interpersonal functioning variables were associated with residual symptom change.

Exploratory analyses. Because belonging to an ethnic minority group was associated with higher alliance scores at session 4 and greater symptom change between session 1 and 16-week assessment, independent sample t tests were conducted to determine whether ethnic minority groups differed from the majority in terms of initial severity, as measured by pretreatment BDI ($t(33) = .13$, $p = .90$) and session 1 BDI ($t(33) = .15$, $p = .88$). Further, a chi-square test of independence was performed to see if those belonging to an ethnic minority group differed from the majority in terms of gender, X^2 (2, $N = 35$) = .01, $p = .91$. Results suggested that ethnic minority groups and the majority group presented to treatment with similar levels of initial severity and a similar gender breakdown.

Additional bivariate correlations were conducted to determine whether the number of types of interpersonal trauma experienced by a participant was associated with any of the core study variables (i.e., session 1 alliance, session 4 alliance, residual change between sessions 1 and 4, residual change between session 4 and week 16, and residual change between session 1 and week 16). Results indicated no associations between the number of types of interpersonal trauma experienced by participants and the core study variables. Also, ethnic minority and majority youth did not differ in terms of the number of trauma types reported, $t(33) = -.17$, $p = .87$.

Power analyses. Power analyses were also conducted. For bivariate correlations with $N = 35$, $\alpha = .05$, and effect size = .3, the power was .44. For bivariate correlations with $N = 21$, $\alpha = .05$, and effect size = .3, the power was .28. For independent-samples t tests with $n_1 = 20$, $n_2 = 15$, and effect size = .50, the power was .30. For independent-samples t tests with $n_1 = 14$, $n_2 = 7$, and effect size = .50, the power was .18. For multiple regression analyses with $N = 35$, $\alpha = .05$, and effect size = .15, the power was .48 for two predictors, .41 for three predictors, .36 for four predictors, and .32 for five predictors. For multiple regression analyses with $N = 21$, $\alpha = .05$, and

effect size = .15, the power was .29 for two predictors, .23 for three predictors, and .20 for four predictors. As these analyses indicate, power was less than optimal for all analyses.

Discussion

Despite consistent findings that therapeutic alliance is associated with treatment outcome in the youth and adult psychotherapy research literature (Horvath & Symonds, 1991; Martin et al., 2000; Shirk & Karver, 2011), prospective associations are not sufficient to support the claim that alliance is a change mechanism (Shirk et al., 2010). Therefore, the present study aimed to address three primary issues in order to examine therapeutic alliance as a change mechanism in psychotherapy. First, the youth literature has lagged behind adult psychotherapy research in exploring the direction of effect between alliance and symptom change. Few studies have examined the association between early symptom change and subsequent youth alliance, and no study with youth has removed early change from the prediction of outcome by alliance (Shirk & Karver, 2011). Second, researchers have postulated that early changes in treatment may primarily be due to common factors of psychotherapy such as expectancies, hopefulness, and therapeutic alliance (e.g., Haas et al., 2002), and research has yet to find consistent predictors of early treatment response. This study was one of the first to measure youth alliance during session one and examine its association with early gains. Third, it has been suggested that the association between alliance and outcome might simply reflect the impact of third variables, especially interpersonal variables, on both alliance and outcome (Kazdin & Whitley, 2006). For example, individuals characterized by better social functioning might form more positive alliances and respond more favorably to psychosocial interventions. Prior research in the youth literature have focused on parent alliance (e.g., Kazdin & Whitley, 2006), and no study has included a range of interpersonal variables assumed to be related to youth alliance.

The present study addressed these gaps in youth therapy research in the context of a clinic-based psychotherapy trial for adolescents with depression and a history of interpersonal trauma. Research has shown that experiencing interpersonal trauma during childhood predicts

subsequent difficulties in interpersonal functioning (e.g., Davis & Petretic-Jackson, 2000; Kolbo et al., 1996; Kolko, 1992). These interpersonal functioning difficulties might negatively impact an individual's ability to develop a positive therapeutic alliance and experience symptom improvement during psychotherapy. As expected, there was considerable variability in youth alliance within this population. Of note, two treatment condition were used in the present study, a manual-guided m-CBT and TAU. Despite the use of a manual-guided treatment in the context of a community-based clinic, no significant difference in alliance scores were present across groups.

The first set of analyses explored the direction of effect between therapeutic alliance and treatment outcome. It was hypothesized that therapeutic alliance would continue to predict subsequent change, after removing change that occurred prior to measuring therapeutic alliance. While early therapeutic alliance measured at session 1 was not related to change in depressive symptoms during treatment, more positive therapeutic alliances measured at session 4 predicted greater decreases in depressive symptoms during the course of treatment. This pattern is consistent with recent findings by Ormhaug, Jensen, Wentzel-Larsen, and Shirk (2013) who found that adolescent self-reported alliance at mid-treatment predicted reductions in PTSD symptoms, but first session alliance did not. After adding gender and ethnic minority status as control variables, session 4 therapeutic alliance continued to predict 4% of the outcome variance, though the association was no longer statistically reliable. Overall, results from prior youth studies have indicated that, on average, the alliance accounts for approximately 4% of outcome variance (e.g., Chiu et al., 2009; Karver et al., 2006; Shirk & Karver, 2011). Current results are consistent with this estimate and should not be dismissed because sample size limited statistical power.

While the prospective relationship between therapeutic alliance and treatment outcome supports alliance as a mechanism of change in psychotherapy, the possibility remains that early change in treatment is contributing to the development of therapeutic alliance. However, only a small association was found between early residual change and therapeutic alliance at session 4 accounting for 3% of the variance, indicating that greater change predicted more positive

alliances. Of note, this small association was no longer present when controlling for gender and ethnic minority status.

A stronger test of the contribution of the alliance to outcome was performed by removing early change and by predicting only symptom change that occurred *after* alliance measurement. Results again showed a significant predictive relationship between alliance and outcome, though the magnitude of this relationship was reduced when age and ethnicity were included in the predictive equation. Still, session 4 alliance accounted for approximately 4% of subsequent change, a result that is consistent with meta-analytic findings (Shirk & Karver, 2011). Equally important, these results are consistent with findings from the adult alliance literature (Barber et al., 2000; Gaston et al., 1991; Klein et al., 2003; Zuroff & Blatt, 2006). For example, Barber and colleagues (2000) demonstrated that alliance at session 5 was associated with prior symptom change; however, session 5 alliance continued to predict subsequent change in symptoms after controlling for change occurring prior to session 5.

Analyses of associations between early symptom change and subsequent alliance also supported the view that the alliance is a predictor of change rather than a consequence of change. The magnitude of association between early symptom change and subsequent alliance was small and not statistically reliable. Further, early change did not predict change in alliance between session 1 and 4. These results differ from some findings in the adult literature (Feeley et al., 1999), but are consistent with recent findings in the adolescent literature (Ormhaug et al., 2013). In this study, also with traumatized adolescents, early symptom change did not predict self-reported youth alliance a mid-treatment. Results from the current study complement these findings by reliably assessing alliance through observational ratings. Other recent findings suggest that therapeutic alliance and symptom change demonstrate a reciprocal relationship when measured each session (Marker, Comer, Abramova, & Kendall, 2013). In other words, changes in therapeutic alliance predicted symptom change, and symptom changes predicted change in therapeutic alliance over the course of CBT for child anxiety. It is not clear if a similar reciprocal relation would emerge with depressed or traumatized adolescents if symptoms and

alliance were measured at each session. The current study was limited by the measurement of alliance at two points in time. However, current results indicate that the alliance is not simply a by-product of early symptom change, but rather functions as a predictor of change.

In contrast to positive links between session 4 alliance and symptom change over the acute phase of treatment, first session alliance did not predict early gains. Early gain is a common phenomenon in the treatment of depression and anxiety (e.g., Crits-Christoph et al., 2001; Haas et al., 2002; Renaud et al., 1998), and it has been shown to occur across different types of treatment (e.g., cognitive, behavior, psychodynamic, existential, family, and supportive psychotherapy). Given that early gains do not appear to be linked to specific therapy procedures, it was hypothesized that alliance could be an important contributor to early symptom change. Previous studies have primarily identified pretreatment client characteristics as predictors of early change such as age and initial symptom severity (Renaud et al., 1999; Stulz et al., 2007). On the other hand, Tang and DeRubeis (1999) posited that important specific strategies are present during the early phase of treatment, and successfully learning and employing these strategies may contribute to early symptom change. However, Shirk, Crisostomo, Gudmundsen, and Jungbluth (in press) failed to find any association between involvement in skills acquisition components of treatment and early change among depressed adolescents.

Contrary to expectation, the current study found no association between early alliance measured at session 1 and early change in treatment, despite the presence of substantial early change. Additionally, early alliance did not predict overall symptom change during the course of treatment. These results are consistent with prior research (e.g., Ormhaug et al., 2013). Ormhaug and colleagues (2013) found no association between session 1 alliance and early symptom change. It is noteworthy that in the current study, alliance measured at session 1 and session 4 were only moderately correlated. These findings suggest that alliance measured at the start of treatment might be qualitatively different from the therapeutic alliance that develops over time. To this end, session 1 alliance showed some associations with pretreatment social functioning variables, whereas session 4 alliance did not.

Although results established the alliance as a predictor rather than a consequence of symptom change, it is possible that third variables account for the predictive association. To strengthen the case for the alliance as a change mechanism, a set of pretreatment social characteristics were assessed as potential third variables. If alliance is a mere proxy for pretreatment characteristics that account for change, then these characteristics should be related to alliance and predictive of symptom change. Analyses explored pretreatment interpersonal functioning (i.e., social problems, interpersonal problems, and attachment style) as potential third variables accounting for the relationship therapeutic alliance and change in treatment. Again, these results must be interpreted with caution due to the significant decrease in power, resulting from the reduced sample size due to challenges obtaining pretreatment interpersonal functioning data. Although only one difference was observed between participants with and without complete data (i.e., those with complete data showed slightly higher alliance scores than those missing data), results from this very small sample must be viewed as preliminary.

Overall, there were only scattered associations between pretreatment interpersonal functioning characteristics and alliance. In fact, no pretreatment characteristic was associated with session 4 alliance. Social Problems and attachment style did not predict alliance at either time point. However, two subscales of the interpersonal problems inventory showed associations with first session alliance. Participants that rated themselves higher on the Too Caring subscale of interpersonal problems demonstrated more positive alliances at session 1, and participants that rated themselves higher on the Hard to be Supportive subscale of interpersonal problems demonstrated less positive alliances at session 1. The results suggest that adolescents who are very caring, perhaps too caring, exhibit relatively positive first session alliances. This pattern may reflect a highly agreeable interpersonal style that makes initial engagement relatively easy. Further, adolescents that find it difficult to be supportive to others, exhibit relatively less positive first session alliances, which may reflect a more confrontational interpersonal style making initial engagement more challenging. However, these patterns do not appear to carry over to later alliance.

A few studies have evaluated pretreatment interpersonal functioning variables or related constructs (e.g., the parent-child relationship quality) as predictors of youth alliance (Devet et al., 2003; Eltz et al., 1995; Kazdin & Whitley, 2006; Gavin et al., 1999), and a number of studies with youth populations found that youth presenting with externalizing problems, which frequently include social problems, were more difficult to engage in positive therapeutic alliances (Bickman et al., 2004; Garcia & Weisz, 2002; Green et al., 2001; Henggeler et al., 1998). The current findings are fairly consistent with results from the youth literature. For example, in a sample of adolescents with a history of maltreatment, Eltz and colleagues (1995) found that interpersonal problems, but not overall symptom severity, predicted initial alliance difficulties. No studies in the youth literature specifically identified specific pretreatment interpersonal functioning variables related to more positive alliances. However, in the adult literature, Muran and colleagues (1994) reported a positive correlation between friendly-submissive interpersonal behaviors with alliance development and a negative correlation between hostile-dominant interpersonal behaviors with alliance development, which also appears consistent with results of the current study.

Interestingly, pretreatment interpersonal variables showed a different pattern of association with session 1 versus session 4 alliance. It is possible that therapeutic alliance is a process in psychotherapy that develops over time, and therefore, alliance at session 1 may demonstrate qualitative differences from alliance measured later in treatment. Early therapeutic alliance may more highly reflect pretreatment client characteristics such as client interpersonal functioning. For example, a client who is interpersonally agreeable will very likely demonstrate a positive therapeutic alliance during the first session of psychotherapy. However, therapeutic alliance measured later in the treatment process may more highly reflect a better-developed dyadic relationship between a client and therapist. This development of therapeutic alliance over time could account for the pattern of associations between client pretreatment interpersonal functioning variables and alliance at session 1 as well as the lack of associations with alliance at session 4. Providing additional support to the development of therapeutic alliance over time, the correlation between the TPOCS-A subscales (i.e., task and bond) decreased between session 1

and session 4. This may demonstrate movement from a more general positive relationship between a client and therapist to a more interactive therapeutic relationship. Further, it may be the quality of this dyadic therapeutic relationship that contributes to symptom improvement as opposed to an early alliance more highly driven by pretreatment client characteristics. In further support of this hypothesis, even when controlling for pretreatment interpersonal problems associated with overall change in depressive symptoms and subsequent symptom change, session 4 therapeutic alliance continued to predict overall and subsequent symptom change.

There were, however, other pretreatment characteristics that showed relationships with alliance. Being female was associated with more positive therapeutic alliances at session 4 than their male counterparts. This is consistent with a study performed with substance-abusing adolescents (Wintersteen, Mensinger, & Diamond, 2005). The authors reported that adolescent females in the study reported higher alliances than males, particularly when the adolescent females were matched with female therapists. Because three of four therapists in the current study were female and the majority of the participant sample was also female, gender and whether participants and therapists were matched or mismatched according to gender may have played a role in this discrepancy. Due to the small sample size and only one participating male therapist, this issue was unable to be explored further in the current study; however, the current study is able to extend prior results by the use of an observational measure and not a self-report measure of therapeutic alliance.

Belonging to an ethnic minority group was related to higher therapeutic alliance scores at session 4 and greater symptom improvement over the acute phase of treatment. In contrast to interpersonal variables, ethnicity appeared to function as a potential confounding third variable in the alliance-outcome association. These findings were somewhat surprising as some prior research has suggested smaller gains in treatment for ethnic minority youth (Huey and Polo, 2010). Further, all therapists in the current study were European-American and, therefore, differed in ethnicity from minority youth. Some research has shown more positive alliances for ethnically matched dyads compared to mismatched dyads (e.g., Wintersteen et al., 2005). Given

that ethnic matching could not account for these results, other potential variables were examined. Gender, as stated above, was related to more positive alliance scores at session 4; however, ethnic minority and ethnic majority groups did not differ in terms of gender composition. Also, prior studies have indicated that higher levels of initial symptom severity are related to better initial alliances (Shirk et al., 2008). However, the ethnic minority and ethnic majority groups did not differ in terms of initial severity either. Finally, because prior trauma has been shown to be predictive of alliance (Eltz et al., 1995), differences in number of trauma were also examined, but no ethnic group difference emerged. In sum, ethnic group differences in alliance and outcome cannot be explained by several factors known to be related to alliance and outcome. It should be noted that the association between alliance and outcome in both ethnic minority and majority groups was in the expected direction. Given the small sample size of this study, replication of ethnic differences is essential.

Few pretreatment variables predicted symptom change. Only the Too Aggressive and Too Open subscales of the IIP-32 were associated with symptom change over the course of treatment, and neither of these subscales was associated with alliance at either time point. In general, there was essentially no evidence that pretreatment interpersonal functioning variables operated as a third variable in alliance – outcome associations. Again, it is difficult to view these results with confidence as they are based on a small sample that was further diminished by data collection problems. Nevertheless, this is the first study in the youth literature to directly assess a variety of pretreatment interpersonal variables as predictors of alliance and outcome, and preliminary results suggest that alliance-outcome relations are not a function of these variables.

The findings in this study need replication, as there are a number of important limitations. First, analyses included a maximum of 35 participants, which dropped to 21 participants for analyses involving pretreatment interpersonal functioning. This left analyses underpowered for virtually all analyses, but especially for regression analyses involving two to five predictors. Second, the current study involved a unique sample of adolescents with depression and a history of interpersonal trauma, and consequently, it is uncertain whether these findings can be

generalized to a population with different presenting problems or trauma history. Third, only two sessions of alliance were coded. Assessment of alliance and symptoms at each session would provide a stronger test of the potential reciprocal relations between alliance and symptom change. Fourth, youth were nested within therapists. Although therapist differences were controlled, these analyses did not account for within therapist correlations in alliance. Finally, the study focused on only one measure of symptom change. Though change in depression was the primary outcome variable, it would have been useful to assess symptoms from another source. Future research directions might include measures of therapeutic alliance at more time points, further exploration of pretreatment client characteristics with a larger sample, closer examination of the role of gender and ethnicity, and exploration of the differential impact of specific and non-specific factors during different treatment phases.

The study did, however, have a number of strengths. Alliance was reliably coded at two points in time, and both overall and early change in symptoms were assessed. The sample included an ethnically diverse group of youth who all met diagnostic criteria for a depressive disorder, and though the sample was further reduced, a range of pretreatment interpersonal functioning variables were assessed as potential predictors of alliance and outcome.

In conclusion, results supported therapeutic alliance at session 4 as a predictor of subsequent change in depressive symptoms, after removing prior change. However, session 1 alliance was not associated with early symptom change or overall symptom change during treatment. Additionally, multiple pretreatment interpersonal functioning variables were associated with session 1 alliance, but no pretreatment interpersonal functioning variables were related to session 4 alliance. Two points seem worth highlighting. Therapeutic alliance measured after session 1 appears to reflect the quality of the *relationship* between youth and therapist, and this relationship construct is a predictor of subsequent change in symptoms. Initial results suggest that alliance is not simply an artifact of early symptom change nor a mere proxy for pretreatment interpersonal functioning characteristics. In this regard, results provide some support for the alliance as a mechanism of change in adolescent therapy. Replication of these results with

different samples of youth will increase confidence that alliance is a change mechanism in youth psychotherapy.

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Appendix

Table 1

Means, Standard Deviations, Skew and Kurtosis for Model Variables

Measure	Timepoint	*N*	Mean (*SD*)	Skew Statistic (*SE*)	Kurtosis Statistic (*SE*)
Observed alliance (TPOCS-A)	Session 1	35	29.87 (5.83)	-.86 (.40)	.89 (.78)
Observed alliance (TPOCS-A)	Session 4	30	30.53 (6.37)	-.64 (.43)	-.01 (.83)
Depression symptoms (BDI)	Session 1	35	26.43 (12.61)	-.04 (.40)	-.83 (.78)
Depression symptoms (BDI)	Session 4	32	22.19 (11.54)	.66 (.41)	.32 (.81)
Depression symptoms (BDI)	16-week	33	19.09 (12.65)	.47 (.41)	-.49 (.80)
Social Problems (CBCL)	Pretreatment	21	64.63 (9.39)	.25 (.40)	-.67 (.78)
Hard to be Sociable (IIP-32)	Pretreatment	21	5.14 (3.66)	.45 (.50)	-.59 (.97)
Hard to be Assertive (IIP-32)	Pretreatment	21	6.05 (3.99)	.12 (.50)	-.1.19 (.97)
Too Aggressive (IIP-32)	Pretreatment	21	8.05 (4.78)	.30 (.50)	-1.17 (.97)
Too Open (IIP-32)	Pretreatment	21	7.38 (3.23)	.64 (.50)	.37 (.97)
Too Caring (IIP-32)	Pretreatment	21	7.43 (4.08)	-.03 (.50)	-1.16 (.97)
Hard to be Supportive (IIP-32)	Pretreatment	21	4.38 (3.19)	.47 (.50)	-.83 (.97)
Hard to be Involved (IIP-32)	Pretreatment	21	4.05 (3.11)	.46 (.50)	-.78 (.97)
Too Dependent (IIP-32)	Pretreatment	21	6.05 (4.31)	.68 (.50)	-.02 (.97)
Depend subscale (AAS)	Pretreatment	21	15.90 (4.61)	-.72 (.50)	-.32 (.97)
Anxiety subscale (AAS)	Pretreatment	21	17.62 (4.39)	.45 (.50)	-.48 (.97)
Close subscale (AAS)	Pretreatment	21	20.24 (*4.43*)	-.66 (.50)	-.14 (.97)

Note: The Therapy Process Observational Coding System – Alliance Scale (composite score; TPOCS-A). Beck Depression Inventory (composite score; BDI). Child Behavior Checklist (T score; CBCL). Inventory of Interpersonal Problems-32 (subscale composite scores; IIP-32). Adult Attachment Scale (subscale composite scores; AAS).

Table 2

Treatment Condition Differences

Variable	Group	*n*	*Mean* (*SD*)	*t*	*p*
Session 1 alliance (TPOCS-A)	TAU	20	30.95 (5.07)	1.28	.21
	m-CBT	15	28.43 (6.62)		
Session 4 alliance (TPOCS-A)	TAU	20	31.40 (5.84)	.94	.35
	m-CBT	15	29.40 (6.67)		
Session 1 to 4 residual change (BDI)	TAU	20	.26 (1.01)	1.89	.07
	m-CBT	15	-.35 (.86)		
Session 4 to week 16 residual change (BDI)	TAU	20	-.18 (1.09)	-1.28	.21
	m-CBT	15	.24 (.80)		
Session 1 to week 16 residual change (BDI)	TAU	20	-.09 (1.08)	-.60	.55
	m-CBT	15	.12 (.87)		
Social Problems (CBCL)	TAU	20	63.80 (8.61)	-.60	.56
	m-CBT	15	65.73 (10.56)		
Hard to be Sociable (IIP-32)	TAU	14	5.36 (4.03)	.37	.72
	m-CBT	7	4.71 (3.04)		
Hard to be Assertive (IIP-32)	TAU	14	6.43 (3.94)	.61	.55
	m-CBT	7	5.29 (4.31)		
Too Aggressive (IIP-32)	TAU	14	8.14 (4.82)	.13	.90
	m-CBT	7	7.86 (5.08)		
Too Open (IIP-32)	TAU	14	6.86 (3.46)	-1.05	.31
	m-CBT	7	8.43 (2.64)		
Too Caring (IIP-32)	TAU	14	7.29 (4.48)	-.22	.83
	m-CBT	7	7.71 (3.45)		
Hard to be Supportive (IIP-32)	TAU	14	4.21 (3.56)	-.33	.74
	m-CBT	7	4.71 (2.50)		
Hard to be Involved (IIP-32)	TAU	14	4.14 (3.21)	.19	.85
	m-CBT	7	3.86 (3.13)		
Too Dependent (IIP-32)	TAU	14	5.07 (3.81)	-1.52	.15
	m-CBT	7	8.00 (4.86)		
Depend subscale (AAS)	TAU	14	16.14 (4.49)	.33	.75
	m-CBT	7	15.43 (5.19)		
Anxiety subscale (AAS)	TAU	14	17.50 (4.65)	-.17	.87
	m-CBT	7	17.86 (4.14)		
Close subscale (AAS)	TAU	14	19.71 (4.21)	-.76	.46
	m-CBT	7	21.29 (4.99)		

Note: Treatment as usual (TAU). Modified cognitive behavioral therapy (m-CBT). The Therapy Process Observational Coding System – Alliance Scale (TPOCS-A). Beck Depression Inventory (BDI). Child Behavior Checklist (CBCL). Inventory of Interpersonal Problems-32 (IIP-32). Adult Attachment Scale (AAS).

Table 3

Full and Reduced Sample Differences

Variable	Group	*n*	*Mean* (*SD*)	*t*	*p*
Gender	Full	21	1.76 (.44)	-.28	.21
	Incomplete	14	1.93 (.27)		
Age	Full	21	15.33 (1.59)	-.33	.75
	Incomplete	14	15.50 (1.29)		
Ethnic minority status	Full	21	.76 (.44)	1.18	.25
	Incomplete	14	.57 (.51)		
Session 1 alliance (TPOCS-A)	Full	21	30.14 (5.01)	.33	.74
	Incomplete	14	29.46 (7.07)		
Session 4 alliance (TPOCS-A)	Full	21	31.76 (6.54)	1.45	.16
	Incomplete	14	28.71 (5.36)		
Session 1 to 4 residual change (BDI)	Full	21	.00 (1.19)	-.03	.98
	Incomplete	14	.01 (.61)		
Session 4 to week 16 residual change (BDI)	Full	21	-.06 (1.03)	-.46	.65
	Incomplete	14	.09 (.94)		
Session 1 to week 16 residual change (BDI)	Full	21	-.05 (1.07)	-.38	.71
	Incomplete	14	.08 (.87)		

Note: The Therapy Process Observational Coding System – Alliance Scale (TPOCS-A). Beck Depression Inventory (BDI).

Table 4

Correlations between Demographics and Model Variables

Model Variables	Gender	Ethnic Minority	Age
	Spearman's	*Spearman's*	*Pearson's*
Session 1 alliance (TPOCS-A)	.17	-.02	.53**
Session 4 alliance (TPOCS-A)	.39*	.34*	.27
Sessions 1 to 4 residual change (BDI)	-.17	-.32	-.01
Sessions 4 to 16 residual change (BDI)	-.14	-.27	-.17
Sessions 1 to 16 residual change (BDI)	-.13	-.39*	-.13
Social Problems (CBCL)	-.07	.21	.02
Hard to be Sociable (IIP-32)	-.22	-.20	.10
Hard to be Assertive (IIP-32)	-.55*	-.07	-.19
Too Aggressive (IIP-32)	-.01	.31	.04
Too Open (IIP-32)	-.06	-.42	.01
Too Caring (IIP-32)	-.07	-.52*	.29
Hard to be Supportive (IIP-32)	-.06	-.10	-.48*
Hard to be Involved (IIP-32)	-.03	-.20	.12
Too Dependent (IIP-32)	-.11	-.16	-.16
Depend subscale (AAS)	-.14	.33	-.11
Anxiety subscale (AAS)	.05	-.26	.23
Close subscale (AAS)	.11	.08	-.19

Note: * $p < .05$, ** $p < .01$. The Therapy Process Observational Coding System – Alliance Scale (TPOCS-A). Beck Depression Inventory (BDI). Child Behavior Checklist (CBCL). Inventory of Interpersonal Problems-32 (IIP-32). Adult Attachment Scale (AAS).

Table 5a

Therapeutic Alliance at Session 1 Predicting Depression Change

Model	*F*	Standardized *β*	*p*	R^2 Change
Model 1a				
Session 1 depression (BDI)	1.58	.31	.09	.08
Session 1 alliance (TPOCS-A)		-.12	.51	.01
Model 1b				
Session 1 depression (BDI)	2.21	.32	.07	.08
Therapist		-.22	.24	.02
Age		-.22	.27	.01
Ethnic minority status		-.42*	.02	.16
Session 1 alliance (TPOCS-A)		.11	.62	.01

Note: * $p < .05$. Results in parentheses were performed using the reduced sample size ($N = 21$). The Therapy Process Observational Coding System – Alliance Scale (TPOCS-A). Beck Depression Inventory (BDI).

Table 5b

Therapeutic Alliance at Session 4 predicting Depression Change

Model	*F*	Standardized *β*	*p*	R^2 Change
Model 2a				
Session 1 depression (BDI)	4.61*	.54**	.01	.08
Session 4 alliance (TPOCS-A)		-.47*	.02	.15
Model 2b				
Session 1 depression (BDI)	2.92*	.48*	.02	.08
Gender		-.12	.49	.04
Ethnic minority status		-.25	.16	.12
Session 4 alliance (TPOCS-A)		-.30	.19	.04

Note: * $p < .05$. ** $p < .01$. Results in parentheses were performed using the reduced sample size ($N = 21$). The Therapy Process Observational Coding System – Alliance Scale (TPOCS-A). Beck Depression Inventory (BDI).

Table 6

Early Symptom Change Predicting Therapeutic Alliance

Model	*F*	Standardized *β*	*p*	R^2 Change
Model 1				
Gender	4.06*	.41*	.01	.17
Ethnic minority status		.34*	.05	.11
Sessions 1 to 4 residual change (BDI)		.00	1.00	.00
Model 2				
Session 1 alliance (TPOCS-A)	1.84	.28	.11	.07
Sessions 1 to 4 residual change (BDI)		-.17	.32	.03

Note: * $p < .05$. ** $p < .01$. Results in parentheses were performed using the reduced sample size ($N = 21$). The Therapy Process Observational Coding System – Alliance Scale (TPOCS-A). Beck Depression Inventory (BDI).

Table 7

Therapeutic Alliance Predicting Subsequent Symptom Change

Model	*F*	Standardized *β*	*p*	R^2 Change
Model 1a				
Session 4 depression (BDI)	7.79**	.58**	.00	.22
Session 4 alliance (TPOCS-A)		-.34*	.03	.11
Model 1b				
Session 4 depression (BDI)	4.02*	.52**	.00	.22
Gender		-.06	.71	.03
Ethnic minority status		-.17	.34	.07
Session 4 alliance (TPOCS-A)		-.24	.22	.04

Note: * $p < .05$. ** $p < .01$. Results in parentheses were performed using the reduced sample size ($N = 21$). The Therapy Process Observational Coding System – Alliance Scale (TPOCS-A). Beck Depression Inventory (BDI).

Table 8

Correlations between Pretreatment Interpersonal Functioning and Alliance

Pretreatment Variable	Session 1 Alliance	Session 4 Alliance	Residual Change (Sessions 1 to 4)	Residual Change (Sessions 4 to 16)	Residual Change (Sessions 1 to 16)
			Pearson's r		
Social Problems (CBCL)	-.21	.20	.18	-.06	.04
Hard to be Sociable (IIP-32)	.27	.05	.12	.12	.14
Hard to be Assertive (IIP-32)	.13	-.26	.18	.06	.10
Too Aggressive (IIP-32)	.00	-.09	-.17	-.48*	-.48*
Too Open (IIP-32)	.40	.01	.09	.40	.42
Too Caring (IIP-32)	.52*	.13	-.08	.28	.24
Hard to be Supportive (IIP-32)	-.46*	-.32	.05	.19	.15
Hard to be Involved (IIP-32)	.06	.10	-.04	.17	.13
Too Dependent (IIP-32)	.19	-.23	-.04	.21	.19
Depend subscale (AAS)	-.22	-.20	.04	-.32	-.29
Anxiety subscale (AAS)	.36	.25	.07	.09	.14
Close subscale (AAS)	-.02	-.24	.04	.11	.12

Note: * $p < .05$. $N = 21$. Child Behavior Checklist (CBCL). Inventory of Interpersonal Problems-32 (IIP-32). Adult Attachment Scale (AAS).

Table 9

Pretreatment Interpersonal Functioning Predicting Therapeutic Alliance at Session 1

Model	*F*	Standardized *β*	*p*	*R*2 Change
Model 1				
Therapist	15.74***	.40**	.01	.28
Age		.55**	.00	.38
Too Caring (IIP-32)		.29*	.04	.08
Model 2				
Therapist	11.03***	.45*	.01	.28
Age		.63**	.00	.38
Hard to be Supportive (IIP-32)		.01	.96	.00
Model 3				
Therapist	18.38***	.39**	.01	.28
Age		.63***	.00	.38
Too Open (IIP-32)		.33*	.01	.10

Note: * $p < .05$. ** $p < .01$. ***$p < .001$. $N = 21$. Inventory of Interpersonal Problems-32 (IIP-32).

Table 10

Therapeutic Alliance Predicting Overall and Subsequent Residual Change, Controlling for Pretreatment Interpersonal Functioning

Model	*F*	Standardized *β*	*p*	*R2* Change
Model 1	9.08**			
Session 1 depression		.08	.71	.02
Too Aggressive		-.58**	.00	.22
Too Open		.60**	.00	.38
Session 4 alliance		-.34	.07	.07
Model 2				
Session 4 depression	14.02***	.34*	.02	.23
Too Aggressive		-.54***	.00	.18
Too Open		.49**	.00	.23
Session 4 alliance		-.39**	.01	.14

Note: * $p < .05$. ** $p < .01$. ***$p < .001$. $N = 21$.